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DATAMATION

FOR MANAGERS OF INFORMATION TECHNOLOGY WORLDWIDE

Ray Noorda, Novell's CEO, with NetWare

JANUARY 1, 1991

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JANUARY 1, 1991

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FOR MANAGERS OF INFORMATION TECHNOLOGY WORLDWIDE

VOLUME 37
NUMBER 1

NetWare 386 is intended to provide the glue that bind LANs with larger systems.

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Novell's Enterprising NetWare 30

BY BOB FRANCIS King of the stand-alone departmental local area network, Novell is working to make NetWare 386 more of a team player on large, mixed internetworks.

Cover photography by Tim Kelly/Black Star

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1991 Industry Outlook 38

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BY TED BUNKER AT&T is finally moving from proprietary minis to computers based on industry-standard RISC processors and its own standard operating system, UNIX System V, release 4. It could be just in time.

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Novell's Vision Of The Enterprise

These days, the idea of the network is much in vogue. All computing roads, the conventional wisdom would have us believe, lead to the network. Corporations are determined to bring order to their often incompatible computing resources, and they'll do this by creating all-encompassing networks that will link these resources efficiently and effectively to serve the corporation and its users.

Sound like a worthy goal? We think so, but we're also quite aware that the road to this new world of what some are calling enterprise networks will not be an easy one. Much has yet to be learned about the crafting of heterogeneous networks, and the learning curve may have a steep arc. That's why the approach taken by such companies as Novell in constructing networks bears watching closely.

FRANCIS: Do all roads lead to networks?

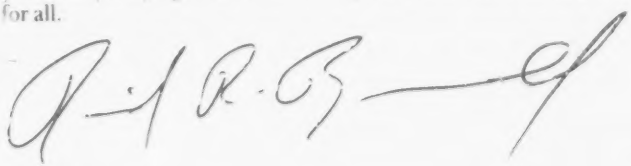
In this issue's cover story, "Novell's Enterprising NetWare," page 30, Dallas bureau manager Bob Francis takes a close look at Novell, an acknowledged force in local area networking operating systems. Novell has a view of crafting enterprise networks that could be described as a building block approach coupled with a realistic view of what's already in place in many companies. Says Raymond J. Noorda, Novell's president and chief executive officer: "What we have to do is provide an environment where companies can preserve their data, this huge mass of data that they've written through the years. We have to make sure that data is safe and secure and, at the same time, provide a useful platform for applications. Also, we have to provide service and support for that. I say we, but it's not just us, it's the whole industry. We can't walk away from that."

With its connectivity plans consisting of support for IBM's Systems Application Architecture (SAA), the UNIX operating system and Apple Macintoshes, Novell is clearly intent on casting a net beyond corporate departments to larger sites and organizations. It has to. Stand-alone networks are becoming as inconceivable to corporate IS strategy as are stand-alone PCs. As Novell goes forward with its plans for NetWare, pay close attention. The lessons learned may make your own journey down the road to enterprisewide networks a little less bumpy.

Crystal Gazing For 1991

A favorite game this time of year is predicting what will happen throughout the coming months. But it's a game with pretty high stakes for both consumers and producers of information technology products and services. So DATAMATION's editorial team fanned out across the industry to get a fix on what might happen in 1991 in PCs, workstations, networks, software and systems, both here and abroad.

What we came up with, I think you'll agree, is a comprehensive look at an industry in change economically and technologically. Many industry segments—including general purpose business PCs and minicomputers—will experience little if any growth this year. But high-end workstations, laptop computers, software and services should do fairly well. The wild cards, of course, are elements larger than the IT industry itself—the national economy, consumer confidence, the Persian Gulf. How they will play out is anybody's guess, but one thing's for sure: there will be plenty of excitement for all.



David R. Brousell, Editor

Coming Next Issue

- The State Of OS/2
- COMDEX Report
- What's Hot In Laptop Software
- The Latest In High-Speed Protocols

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SPECIAL REPORT
FORECAST

INDUSTRY OUTLOOK

Slow growth is expected in most traditional industry equipment segments over the next 12 months. But there are bright spots: software, laptop PCs, workstations and services.

For IS managers, the watchwords of the new year are "downsizing," "outsourcing," "do more with less." And for many of the companies that supply them with information technology products and services, the corresponding chant is "flat," "on hold," "in transition."

What's wrong, mostly, with the IT marketplace is what's wrong with business and with the economy in general. A lack of confidence, a fear of recession, tougher competition and an unstable international situation caused by tensions in the Persian Gulf are all contributing to a cautious business mood. This caution trickles down to IS budgets, which in turn trickles down to the balance sheets of industry suppliers.

IS budgets in some companies may rise only 5 to 8% in 1991, barely covering cost of living increases for personnel. And these will be the lucky ones. Other departments, part of companies going through larger business retrenchments, will be slashing costs and muttering the dreaded 'O' word—outsourcing.

But beyond economic considerations, IS departments and the companies that supply them have their own peculiar dynamics.

Going on all through this, of course, is the technological transition to lower cost desktop systems and standards through which the industry is headed. On the heels of this transition is the follow-on desire in many companies to craft these innumerable desktops into some rational web that management will believe serves a corporate business purpose.

These changes at the IS consumer level are reverberating at the IS supplier level. Equipment vendors are taking it on the chin. Suppliers are shifting their economic bases from what had been a low-volume, high-margin production model to the brave new world of high volumes and low margins, causing wrenching adjustments that will continue in 1991. Already, the total number of employees cut from such U.S. suppliers Apple Computer Inc., Digital Equipment Corp. and Unisys Corp., as well as such European suppliers as Ing. C. Olivetti & Co. SpA, Groupe Bull SA and NV Philips' GL has reached into the thousands. News of corporate reorganizations has become commonplace. And Wall Street has taken a sledgehammer to valuations of high-tech stocks.

The irony is that computing, driven by the combination of technological advances and a more affordable economic model, is spreading like wildfire. For IS managers, control is the issue; for suppliers, the problem is making a buck they can live on.

But as 1991 unfolds, new opportunities will be apparent. Much in demand will be graphical user interfaces, with their ability to make computing easier and accessible to more and more people. Networking products, productivity-advancing software, laptop- and notebook-size computers, systems that can act as so-called servers in information networks and integration services will also be in demand, fueling growth for companies positioned to deliver them. Mainframe-class computers, driven in part by the start of a new IBM product cycle, may experience

high single-digit, if not outright double-digit, growth next year—for the first year in a long time.

In other market segments, here's the scenario:

The outlook for personal computers, in particular the segment of the market that consists of standard business PCs, may grow only in the low single digits, if it all. It's largely a replacement business now, with the action for '91 being in migration to 386-class machines. DATAMATION/Cowen & Co., in its annual survey of IS managers' mini and microcomputer buying intentions, projected that unit shipments of PCs will increase about 8% for the 12 months ending in June 1991, down several points from the prior year. But rapid growth is expected in laptop and notebook PCs, the markets for which are relatively pristine.

Stronger growth is anticipated in workstations, fueled by the cutting-edge use of reduced instruction set technology. The big winner here is expected to be IBM's RS/6000 line, which is driving the market overall. A 31% surge in dollar growth is projected for this segment by the DATAMATION/Cowen survey.

The market for traditional, proprietary minicomputers will be stone cold in '91, with shipments dropping by as much as 8%, according to DATAMATION/Cowen projections. In other segments, such as UNIX, forecasts of a 40% growth rate in commercial midrange and workstation sites will warm things up, but the real hot spot seems to be systems positioned as network and/or file servers, such as the class of system typified by Compaq Computer Corp.'s SystemPRO computer. The one anomaly in the proprietary minicomputer category is IBM's AS/400, which is expected to continue to do well in 1991.

In the networking arena, double-digit growth rates are expected in such applications as peripheral sharing, file sharing/transfer, database/host access, electronic mail and groupware. The Cowen survey expects greater penetration of departmental and sitewide networks—now at 52% and 30%, respectively—in 1991, as well.

The PC software market should be, as they say, robust. The subindustry created by Microsoft Corp.'s Windows program will see much activity—and perhaps an early shakeout, as well. Database management systems, playing an important role in client/server computing, may enjoy astounding growth, as much as a 172% increase, according to the DATAMATION/Cowen survey.

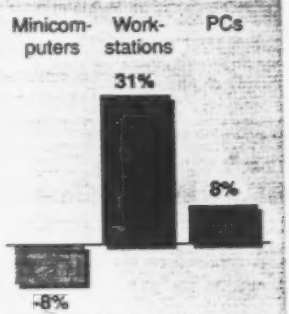
All in all, the new year will shape up to be one of gradual change based on a new, and evolving economic model for both consumers and producers of information technology. As this evolution occurs, 1991 may end up being the year of the journey to a new era in computing, a trip that may be more important than the destination itself. ▭

—*David R. Brousell*

Where The Growth Is

Through the first half of 1991, sales of workstations will fare best.

PROJECTED SHIPMENT GROWTH (In Dollars)



Source: DATAMATION/Cowen & Co.

Following are 1991 outlook reports in four industry segments: Systems, Networks, PCs & Workstations, Software and International.

▶SYSTEMS

IBM Expects Growth Of 7 To 10%

As the recession causes customers to delay capital spending, weakened midrange and large-scale systems vendors are reexamining strategies they've long employed. Most are ensuring that they have scalable and "open" product lines that include innovative and cost-efficient technology. Some companies are changing product directions; all are stressing their ability to provide software and services. Some systems vendors are laying off hundreds to thousands of people both here and in Europe. Although it's a painful time for some companies, the mood is patient and cautiously optimistic.

IBM, for instance, expects growth in the 7 to 10% range, a projection that hasn't changed much since 1990, although officials do say growth could be at the low end of that range in 1991. IBM expects to grow this much because, a company source says, it believes its product line is "particularly well set up for the moment," with products like the RS/6000 workstation, ES/9000 mainframe and the AS/400 midrange system.

IBM continues to focus on base semiconductor technology. It expects, for example, to be among the first commercial vendors of 16-megabit dynamic random access memory (DRAM) devices by 1992. And IBM is already working on 64MB, 256MB and 1-gigabit DRAMs.

IBM believes it will have to introduce new semiconductor production technology before it can come out with a 256MB device. To prepare for this, IBM expects to become the first private owner of a special light source for X-ray lithography sometime in 1991. Such advances are important to IBM users who are anxious to turn their mainframes into efficient data warehouses, with much of the actual processing going to desktop PC client systems.

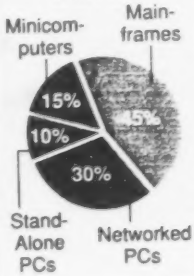
WITH PRODUCTS LIKE THE ES/9000, IBM believes its product line is "particularly well set up for the moment."

Economic Aftershocks Hit Digital

At Digital Equipment Corp., the news is less positive. With 57% of its business outside the United States, Digital had for some time been counting on

Where Distributed Applications Are Going

Mainframes are still the preferred hardware platform for new development, but the trend is to PCs.



Source: DATAMATION/ Cowen & Co.

the healthy international economy to bolster its business. But, as the Japanese and many European economies slow, Digital is reeling. "If there is any contraction in world economies, we will feel it," says Mark Steinkrauss, director of investor relations.

The company plans to reduce its employee head count some 5,000 to 6,000 people by June, the end of its 1991 fiscal year. That would represent about a 4 to 5% decrease in staff from its first-quarter FY91 level of 123,500.

Research and development spending is shrinking slowly, as well. In the late 1980s, R&D grew by approximately $200 million to $300 million a year, says Steinkrauss. But the $1.5 billion the company plans to spend on R&D in FY91 represents a drop from the $1.6 billion, or 12.5% of revenues, it spent the previous year. Despite this gradual slowdown, Steinkrauss calls the $1.5 billion a "very high proportion of revenues." And, says Digital spokesperson Brad Allen, the flow of new products will continue unabated in both hardware and services, as product development times shorten.

Digital is furthering its distributed database offerings by focusing on client/server computing and stepping up promotion of its standby database system, Rdb, which is installed at more than 15,000 sites worldwide. The company is also concentrating on mainframe-style computing as well as on systems integration.

Service: Rx For Health

Spokesperson Allen says that systems integration has a particular attraction for Digital. "Systems integration is growing in double digits," he states, adding that the company will capitalize on that growth, which amounted to revenues of more than $1 billion by late last year. System integration, says Steinkrauss, "is a great way to add value. . . . How many people can take on the MIS needs of a Boeing or a Kodak?"

Electronic Data Systems Corp. believes it can. Indeed, as data center managers continue the current trend of consolidation and outsourcing, IT providers such as EDS are doing well. EDS director of marketing Barry Sullivan says such IT providers can expect to see market growth of 17 to 20% in the United States this year. In Europe, says Sullivan, IT services could grow by as much as 30% in 1991, as European Community-based companies prepare for the unified market slated to become reality on January 1, 1993. EDS is trying to match these industrywide growth rates, says Sullivan.

UNISYS'S EHRLICH: polishing its image as a provider of open systems based on industry-standard processors and operating systems

The Dallas-based company is focusing on technologies that support three broad areas of computing: distributed, client/server computing; multimedia; and technologies that support development and maintenance of applications software, such as computer-aided software engineering.

EDS is trying to standardize on key technologies for distributed computing in the areas of network management, systems management and distributed data management. The company is standardizing on Open Systems Interconnection (OSI) and UNIX, for example.

In multimedia, EDS is working with a number of hardware and software vendors to understand and implement products for complex records management and for storage and retrieval of video and voice data. The company is focusing on integrating multimedia with business applications rather than on building stand-alone applications. EDS is also attempting to formulate standard software development methodologies that can be promulgated throughout an organization.

Minimakers Hurting

Changes in the way customers are doing business as a result of the economic slowdown may be good for service companies like EDS and may hold promise for Digital's systems integration business, but they're not so good for traditional minimakers. In Palo Alto, Hewlett-Packard Co. is feeling the effects of the recession.

HP treasury manager Joe Zaelit reports that, late last year, orders were growing in the "high single-digit area, a little lower than historically we have experienced, and a little lower than we'd like to see." The economy determines the health of HP/Apollo's minicomputer business, says Zaelit: "What will happen to the economy . . . determines what capacity your customers need—how much computing power they want to expand or replace." Nevertheless, the company is optimistic about the high end of its HP 3000 minicomputer line. HP's high-end UNIX-based systems are "doing well," reports Zaelit.

Slow growth is also the forecast at Unisys Corp. in Blue Bell, Pa. Like HP, the company expects demand for hardware and software in the single digits in 1991. However, demand for services could grow at a faster rate, says Everett Ehrlich, vice president for financial and economic analysis. The company plans to pursue revenue growth while continuing to reduce its $3.2 billion debt load by some $600 million to $800 million.

Economic troubles in certain sectors could help Unisys, says Ehrlich. "When structural change happens, we get called in." Banking, retailing and insurance industries, which Unisys has targeted in recent years, are undergoing "times of crisis," as Ehrlich puts it, and are looking for ways to cut costs, improve productivity and enhance products. These industries are trying to improve the way they use information in order to compete more effectively, he says.

Unisys spent much of last year polishing its image as a provider of open systems based on industry-standard processors and operating systems. Users welcome the change. "They are now trying to provide the links between proprietary and open systems," says Bernard Bachmann, first vice president of Union Bank of Switzerland in Zurich and a past president of the Unisys Users Association in Europe.

Unisys continues to upgrade its mainframe technology and during the latter half of this year is expected to introduce the Gladiator, a new version of its 2200 series mainframe. ▭

—Elaine Appleton, Ted Bunker, Jeff Moad, Paul Pinella

INDUSTRY OUTLOOK 91

▶NETWORKS

Solid Gains Seen For Networks, EDI

"We don't see the economy slowing down the networking trend. The potential is greater than ever before and particularly for corporatewide PC networking."

That's what James D'Arezzo, vice president of marketing at Banyan Systems Inc. in Westborough, Mass , says about the coming year. His colleagues at network companies generally agree.

Novell Inc. of Provo, Utah, for example, sees 15 to 20% growth in revenues next year. But the company is expecting more than 50% growth for NetWare 386 over 1990's $70 million in sales.

If there is any tempering of optimism among network-related vendors, it is on the communications hardware side. That's where questions about the economy may dog managers constructing capital equipment budgets.

D'Arezzo would not comment on Banyan's forecast (it's a private company), but Banyan is one of many suppliers that see growth coming from customers who already have nets installed. To meet the needs that large-scale local-area/wide-area networking produces, Banyan is focusing on two fields in the coming year. The firm expects good results from its symmetric-multiprocessing version of VINES, one of the few network operating environments that fully leverage the capabilities of the new generation of multiple processor LAN servers.

Reflecting the increasing heterogeneity of corporate internetworks, Banyan is also working on stepping up its offerings for diverse client workstations. It's a good bet that Macintoshes and PCs running OS/2 will be integrated into VINES in 1991.

EDI Is Hot

The increasing connection of computers at corporate sites is matched, perhaps surpassed, by the growth in data transmission over phone lines. At least one of the reasons is the growth of electronic data interchange (EDI) and internal electronic business communications.

"Transaction volumes are going through the roof," says Paul Zoukis, vice president of marketing for General Electric Information Services in Rockville, Md., a value-added network provider with a strong position in EDI. "EDI usage took off after the '89–90 holiday season. We have 8,000 EDI clients, and they doubled their usage last year."

Zoukis says that GEIS's mail business grew about 40 to 50%. He says that clients no longer consider EDI and e-mail as luxuries—they're seen more as core business necessities. Next year, Zoukis expects 50% growth in the volume of EDI transactions worldwide and similar expansion in electronic business communications. He's concerned, however, that some of the smaller EDI customers will have to delay purchases in a slow economy.

GEIS will focus on industry-specific software development in the coming years, such as the work it recently completed for the transportation industry. And GEIS is working with its parent, Fairfield, Conn.-based General Electric Co., to develop an X.500 naming service that, in conjunction with in-place X.400 gateways, will allow users (and applications) to easily address messages without knowing the exact e-mail address of recipients.

In addition to taking advantage of value-added networking services, many users continue to have private networks. Last year surpassed AT&T's expectations for private line services, says Norm Sperling, product manager for AT&T's Business Special Services group in Edminster, N.J. Sperling says growth rates will be even higher in 1991.

The major push in demand for data communications services is coming from the increasing interconnection of LANs over wide areas, particularly over T1 (1.54 megabit-per-second) lines. Sperling says at least half, and possibly more, of T1 traffic is now taken up by data, rather than voice. At least one factor drawing users to these services has been lower prices. But Sperling looks for stabilization in private line pricing in the coming year.

As far as the equipment needed to connect to the public and private networks, Per Suneby, director of corporate development for Codex Corp. of Mansfield, Mass., sees great regional differences in international buying patterns. "We're seeing a real risk of a major slowdown in the U.S. because of the U.S.'s vulnerability to a recession." In contrast, Suneby sees a healthy business in Europe and the Far East.

Users in all three regions are buying equipment for digital networking, with market growth in the midteens. LAN/WAN interconnection devices will grow at 30 to 40% a year in 1991, Suneby says. He thinks network management products will expand at a 20%-a-year clip in 1991.

James J. Fiedler, executive vice president of Timeplex Inc., says some equipment purchases will be motivated by a desire to take advantage of the increasing services offered by telephone companies. "The ability to run a hybrid network is becoming more and more paramount," says Fiedler.

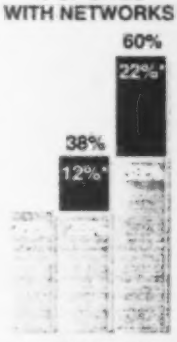
"Our overall outlook," Fiedler continues, "is that in the wide area network part, that is the T1 business and the wide area, on a worldwide basis we see growth almost the same as this year, which is over 20%. I think the U.S. will be flat, not nearly as robust as it was during the past two years. We're looking for high single-digit, low double-digit growth."

Perhaps Darrell Miller, executive vice president of Novell, best sums up the effects of the economic downturn on the coming year in networking: "Our plans are cautiously optimistic. Cautious because we read about a slowing of the economy and optimistic because we're a cost-effective technology and have cost-effective solutions to customers' needs. In an economic downturn, we see customers migrating to our segment of the industry."

—Mark Schlack, Tom McCusker

Double-Digit Growth For Networks

Organizationwide networks will grow at a fast clip in 1991 and beyond.



Source: DATAMATION/ Cowen & Co.

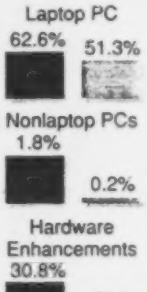
BANYAN'S D'AREZZO: Sees growth coming from customers who already have nets.

▶ PCs & WORKSTATIONS

RISC, Multiprocessing Are The Hot Spots

Laptop Growth Catches Fire

In both units and dollars, sales of laptops will blow past 50% growth for the 12 months ending in June 1991.



Source: DATAMATION/ Cowen & Co.

The uncertain economic climate of 1991 tempers the enthusiasm of all major players in the PC and workstation industry segment. With U.S. sales slowing and overseas revenues dependent upon an unpredictable European economy, many suppliers are hesitant to forecast sales for the entire year. "We are reluctant to project too far out today," admits Joe Zaelit, treasury manager at Palo Alto-based Hewlett-Packard Co. Michael Swavely, president of Compaq North America, is a little less cautious. He says 1991 industry growth will be 10 to 15% worldwide.

Such optimism may be justified, considering that PC and workstation companies are on the favorable side of the downsizing trend and therefore fairly well protected against budget trimming. With recession wary customers reluctant to invest in large-scale capital expenditures, the smaller system suppliers are apt to continue growing at the expense of their big-system competitors.

Smaller And Faster

On the new-product front, 1991 bodes well for some interesting announcements in the symmetric-multiprocessing (SMP) arena. Last year, Compaq added Intel 80486 power to its SystemPRO SMP server and is now working with Novell Inc. to develop fault tolerant system software to work with it. And NexGen Microsystems Inc., a San Jose, Calif., company in which Compaq has a minority stake, is reportedly developing a superscalar microprocessor compatible with Intel's 486 chip. The NexGen chip is not due until the first half of 1991 and could later become the centerpiece in a scalable system from Compaq.

Workstation market leaders will continue to leapfrog one another using reduced instruction set computing as the springboard. Late last year, IBM and Sun Microsystems Inc. both added high-end workstations to their product lines. The power curve this year may be further extended through SMP technology at the single-user workstation level. "Our focus at the high end over the next year will include multiprocessing, high throughput and networking," says Cheryl Vedo, vice president of product marketing for Sun's General Systems group. Regarding the prospect for a new SMP workstation, Vedo says, "that's a distinct possibility."

With Sun and IBM on a workstation roll and now both pursuing the vast business market beyond engineering, Digital Equipment Corp. and Hewlett-Packard will be pressed to regain lost momentum. Says HP's Zaelit: "Our PCs have been fairly spotty recently, and our workstation business has been flat for the last three quarters. But you can expect to see new products in 1991." Digital, too, is likely to unveil a new generation of workstations based on the R3000A RISC chip from Mips Computer Systems Inc. of Sunnyvale, Calif.

At the low end of the PC market, industry leaders Apple Computer Inc. and IBM launched systems last year aimed at the home, small-business and network node niches. The IBM PS/1 and the Apple Macintosh Classic are just the first salvos in a forthcoming barrage of low-end systems due out this year.

Most analysts predict that the real double-digit growth will happen in the red hot notebook PC market, although sales of PCs based on the 486 chip are expected to pick up as well. Compaq's new LTE 386s/20, announced last year, was among the first of a new breed of 386SX-based laptops to flood the market. The LTE is now being pursued by dozens of clones, which will drive prices down. One such competitor, the NEC ProSpeed SX/20, can be equipped with up to 5 megabytes of random access memory and a 40MB hard disk. Meanwhile, analysts say that 1991 will be the year that Apple finally invites a Japanese manufacturer to build what it could not—a lightweight notebook Mac. ▭

—Paul Pinella, Bob Francis

SAS'S GOODNIGHT: A recession, if it should occur, shouldn't affect SAS. He expects another 15% revenue hike this year. "Europe's already forecasting 30% growth."

▶ SOFTWARE

Software Execs In Upbeat Mood

Although software industry leaders agree that 1991 will be a difficult year for the world economy, few expect the slide in general economic growth to hurt them. In many cases, in fact, industry leaders see benefits for their companies from the slowdown.

Says Charles B. Wang, chairman and chief executive officer of Computer Associates International Inc., "We can all agree that we're uncertain about what the economy's going to do over the next 12 or 14 months. People are becoming mindful of spending." That means software vendors with efficiency-promoting products could benefit from a weakening economy.

Wang is hopeful that the company's new CA90s architecture strategy, intended to tie many of its products together, will reap dividends. He also expects strong growth in the company's system management product line, as users responding to the industrywide move to hold the line on costs more aggressively implement programs to monitor system performance. Other suppliers of systems management software concur.

Aubrey Chernick, chairman of Los Angeles-based Candle Corp., points out that, in times of economic uncertainty, spending priorities shift toward mission-critical applications and to software that can help improve system performance and control costs.

INDUSTRY OUTLOOK 91

UNIX Comes On Strong

UNIX will become the operating system of choice at more commercial and technical sites in 1991.

Source: DATAMATION/ Cowen & Co.

Sales of IBM's DB2 relational database management system might suffer, for example, at the same time that sales of DB2 performance monitors rise.

Explains Mario Morino, executive vice president of the IS management division of Legent Corp. in Vienna, Va.: "We're in a counter-cyclical segment of the industry. We normally see a noticeable pickup in interest in systems management and performance-improving software when times are tough."

In the large-scale IBM mainframe market, software companies are watching carefully IBM's introduction of the new ES/9000 mainframe family. James Goodnight, president of SAS Institute Inc. in Cary, N.C., is casting a wary eye on the new IBM equipment. The reason Goodnight has reservations about whether the ES/9000 line may benefit software companies like his is that the overall population of mainframes is continuing to shrink.

Even though SAS, and other companies, price their software according to CPU size and will therefore reap increased revenues from individual licenses when selling products for the larger machines like the ES/9000, such moves are not enough to offset the shrinking population, Goodnight says. "The problem is that people tend to swap two [machines] for one," he says. "We're able to sell more expensive software on the newer machines, but there are just fewer of them."

As a result, over the last several years, SAS has broadened the scope of its products to embrace midrange computers and PCs.

Dun & Bradstreet Software Services Inc., the fourth largest U.S. software company, with $450 million in revenues, is also bullish about 1991: "1991 should be a good year," says D&B chairman John P. Imlay Jr., a member of DATAMATION's Advisory Board. "During tight economic times, companies are more likely to buy packaged software than [to] try to create it in house." Imlay also expects the economic slowdown to accelerate the corporatewide trend toward integration of midrange and workstation platforms with mainframe hosts. As a result, D&B plans to broaden its midrange and workstation product lines this year.

Lotus Development Corp. is looking to international sales to bolster a potentially lagging U.S. market for PCs and supporting software. To emphasize its global presence, Lotus plans to maintain a 50/50 ratio of international to domestic business, says Frank King, senior vice president of Lotus's software business group. King says Lotus is strong in Europe and Japan, where hardware shipments remain strong too; the company will turn its efforts to the Pacific Rim for growth in order to counter a possible shortfall in U.S. sales this year. Says King: "We're a global company, and we're relying on these efforts to make up any difference in our domestic sales."

PC Software Is Softening

Lotus, which rolled out a steady stream of products running on a wide range of hardware platforms in 1990, will flesh out its spreadsheet product line to include several more in 1991.

Lotus originally balked at moving to a Windows 3.0 graphical user interface (GUI) and put all its money on OS/2, which has been slow to take off among corporate users. "We're as disappointed as the rest of the industry about OS/2," says King.

Microsoft has a new focus for the decade, says Frank Gaudette, senior vice president and chief financial officer at the Redmond, Wash., company. Says Gaudette: "Personal computing will become a much stronger factor in corporate America in the coming decade, and we're going to continue to emphasize products that are easy to install and modify, that provide easy-to-use graphical access to personal information and that approach computing as a bottom-up process."

Over the long term, the company will focus on three strategic product areas, he says—object-oriented technologies, multimedia and handwriting recognition. To help make all this happen, Microsoft plans to hire an additional 750 R&D workers, increasing the total research and development staff a whopping 38% to 2,700.

—J. William Semich, John McMullen

▶ INTERNATIONAL

Recession Hits Europe

"The user is very confused today. The only reasonable decision is to wait." Although these are the words of Bruno Lamborghini, vice president, corporate strategic analysis and planning for Ing. C. Olivetti Co. SpA, they could come from any European computer vendor.

Coming off a booming European market for information technology in 1988 and 1989, customers in 1990 adopted a wait-and-see attitude about capital expenditures that should deepen this year. Most major players—International Computers Ltd. (ICL), Groupe Bull SA, Memorex Telex NV, NV Philips'GL, Olivetti and Siemens-Nixdorf Informationssysteme AG (SNI)—have been confronted with users that are confused about vendors' positions concerning proprietary and open systems.

Customers are also clamping down on spending, as concerns about the Middle East situation continue, the worldwide economy slows and businesses rethink their own strategies in order to prepare for a single European market in 1993. European computer vendors battled with U.S. suppliers in 1990, as prices of U.S.-made systems and software, affected by the weakness of the dollar, grew more attractive to European customers.

Vendors are scrambling to address customers'

INDUSTRY OUTLOOK 91

concerns and revitalize the badly drooping marketplace. European suppliers are following strategies that mirror those of U.S. systems manufacturers: changes in architecture; aggressive spending on research & development, particularly on open systems; decisions to reduce the sizes of direct sales forces and rely more on indirect sales; massive layoffs; and industrywide consolidation, the latter most obviously demonstrated by Siemens AG's acquisition of Nixdorf Computer AG and Fujitsu Ltd.'s acquisition of 80% of ICL.

OLIVETTI'S LAMBORGHINI Investing in multimedia, laptop computers, software and services.

Only software and service companies are still doing well. Cap Gemini Sogeti, the leading European IT services provider, expects to grow at least as fast, if not faster, in 1991 as the 30% the European industry is projected to grow. Last year was also a period of fast growth for the company, which swelled 43% from 14,000 employees in 1989 to 20,000 in 1990.

Cap Gemini secretary general Michel Berty explains the reasons for such growth: "Information technology is becoming part of the [business] strategy of the firm. So [users] invent new demands."

Berty predicts that in 1991 electronic data interchange (EDI) will gain in popularity. So, he thinks, will outsourcing, as projects become increasingly complex. "The trend is to subcontract more and more. . . . Clients could develop [their IT projects] themselves, but they don't have the same resources [that IT service providers do.]"

Weakened hardware vendors smell money in the services business and are rapidly shifting their resources to software and services. Troubled systems vendor Groupe Bull, in one of a number of significant restructuring actions, last year moved 60% of its direct sales force into software, customer service and training. Jean-Claude Albrecht, president of Bull SA (France), expects software, service and training to realize revenues of FF$500 million (about $100 million) in 1991. Bull SA's service revenues are growing at 41% a year, says Albrecht—much faster than the service industry's growth and faster yet than sluggish worldwide hardware growth, which is less than 10% annually.

Bearish On Bull

Groupe Bull needs the money. It lost more than $500 million in 1990, causing many in the industry to question the long-term viability of the company, which is partially funded by the French government. In November 1990, the company announced it will lay off 5,000 people worldwide by the end of this year, with almost 80% of those layoffs to take place in North America and the rest in France. These layoffs follow a work force reduction last year of 2,500. By the end of 1992, the company will close seven of 13 manufacturing plants around the world.

The company is also restructuring its product offerings, placing more emphasis on UNIX and on a distributed architecture, says Ward Mackenzie, executive vice president of corporate product line management. It plans to introduce interconnections between its proprietary GCOS operating system and UNIX-based applications.

Olivetti Down But Not Out

Last fall's shocking news from Groupe Bull was followed within days by Olivetti's announcement that it will reduce its 57,000-strong work force by 7,000 people this year. As with Bull, layoffs and early retirement programs are not new to Olivetti: in 1989 and 1990, the company cut 5,500 jobs. Profit margins are narrowing for companies like Olivetti that rely on standard, commodity products such as DOS- and UNIX-based PCs. Olivetti's profits were 41% lower in the first half of last year than they were in the same period of 1989, down to L60.9 billion ($54 million) from L102.6 billion ($92 million).

Olivetti's Lamborghini, like most company officials nowadays, wants to look at the bright side: the company is "still profitable; our profits declined, but what is important today is to still have profits, not to measure the rate of decline."

While professing not to measure declining profits, the company is indeed measuring the needs of its customer base. Along with a commitment to UNIX shared by systems vendors worldwide, Olivetti is investing in multimedia, laptop computers and software and services. It will continue supporting banking applications, where it has seen some success in Europe but has been hurt in the United States by the failing thrift industry.

SNI Pulls Together

At Siemens-Nixdorf, new president Hans-Dieter Wiedig is leading the company's efforts to merge the existing product lines of Siemens Data Systems and Nixdorf Computer AG. The company, formed in October 1990, said last fall that its combined revenues would exceed DM13 billion (about $8.6 billion) by September 30, 1990. In 1990, Siemens's mainframe business grew 30%, with much of that growth being replacement business from Siemens's own systems market, says Wiedig. In mid-1991, the company plans to introduce a 170-million-instruction-per-second mainframe in response to IBM's System/390; SNI will try to come close to IBM's price/performance ratios with its current and new systems.

The UNIX market has been a challenge for the new company. Wiedig admits that Siemens broke even on UNIX hardware sales in January 1990. The company will struggle to turn a profit on UNIX platforms, says the president: "We must try to break even—we haven't until now because Nixdorf's problems are very heavy ones." To meet the challenge, SNI is merging Siemens's SINIX line of UNIX-based systems with Targon, Nixdorf's line of UNIX platforms. "By the end of 1992, we will have a line with one applications software interface," Wiedig says. SNI plans to run that common applications program interface on both complex and reduced instruction set computers as well as on fault-tolerant machines. ▭

—Elaine Appleton, Tim Mead

Retirement Programs For Older PCs

Many companies must now decide how best to upgrade an installed base of vintage computers. But they don't have to work alone. A growing regiment of suppliers is eager to help plan your PC retirement program.

BY JEFF MOAD

Congratulations.

After several months of careful study, you're finally ready to propose to management a new strategic PC plan for your corporation. It's brilliant, of course. Following a four-month pilot project, the company will migrate to a new graphical user interface environment and a new suite of graphical applications. The new corporate standard will be a 33-megahertz 80386 machine with 2 megabytes of memory, field upgradeable. How can they say no?

There's just one problem. Many of those desks on which you plan to place a gleaming new 386 machine are already occupied by far less glamorous pieces of PC hardware. 286 machines. ATs. Even XTs, growling data off of floppy disks. What do you do with those?

A growing number of IS executives are being forced to deal with that question. They've decided to move to graphical environments such as Microsoft Windows 3.0 or OS/2's Presentation Manager, which work best with the speed and power of 386 technology. But they and their users are saddled with thousands of older PCs.

In the current era of lurking recession and cost cutting, it's unlikely that management will agree to scrap the older machines or give them to charity, even if they are fully depreciated. And simply passing the old box to the next desk down the corporate food chain has its drawbacks. For one thing, those lower-level, first-time PC users were supposed to be among those who would benefit from the new, easier-to-use graphical environments.

In an effort to help corporate PC planners—and make it easier for them to buy new equipment—several vendors and retailers have begun offering users some unusual deals. Dealers such as Businessland Inc. and ComputerLand Corp. are telling large corporate users that they will buy back older PCs at a fixed price and replace them with new gear over a period of time. Even some PC vendors are getting in on the act.

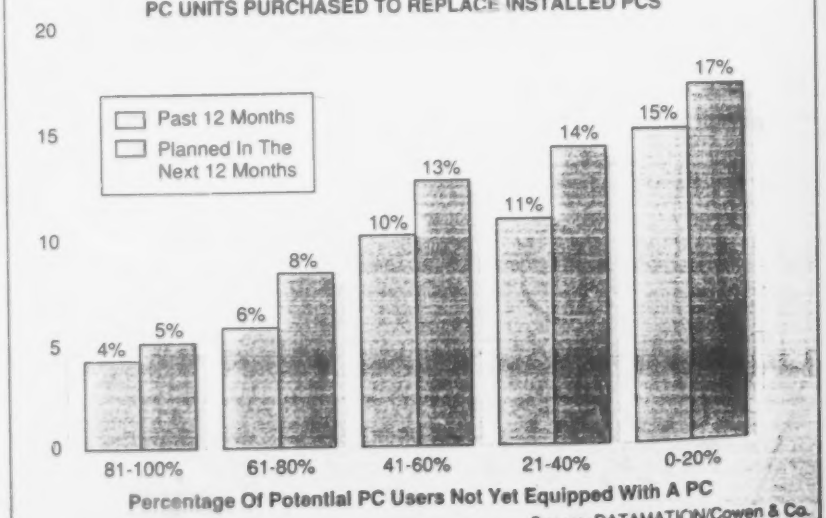
Let's Make A Deal

PC vendor Grid Systems Corp. of Fremont, Calif., for example, recently proposed buying several hundred older 286-based PCs from the wholesale banking group at Wells Fargo Bank in San Francisco and replacing them with new 386-based Grid desktop and portable machines. Grid would then try to dispose of the older machines by placing them with independent remarketers of used equipment.

IS officials at Wells, who want to run Windows 3.0 on the new 386 machines, are still evaluating the Grid proposal. "But we're pleased they're taking this approach," says Tom Eagan, vice president and manager of the Wells Wholesale Network. "It's attractive because a lot of those older machines are coming off the books, and this would allow us to bring in the new machines and not have to pay much more than we're paying now." Besides realizing a tax benefit on the new equipment, Eagan figures he'll get between $500 and $550 for each of

The Run Up In Replacement PCs

A growing number of DATAMATION readers indicate that new PC purchases will be used to replace already-installed computers.



Source: DATAMATION/Cowen & Co.

the old 286 machines.

Officials at Grid declined to discuss their proposal to Wells. And they insisted they have no formal, generally available program to buy back older PCs. Vendors like Grid seem to be willing to extend such deals only to very large corporate users willing to buy hundreds or thousands of new PCs.

Retail Gets Into The Act

Many analysts, however, believe vendors will have to become more open and aggressive about helping users dispose of their older PC gear. "It's something they're all going to have to take more seriously. There's a lot of 286 or below equipment out there that has to go somewhere," says Jim Hickey, manager, in Boston, of the PC solutions practice for G.E. Consulting Services Corp. of Rockville, Md.

In fact, Computer Intelligence, a research firm in La Jolla, Calif., estimates that 40% of the installed base of corporate PCs in the United States is still 8088- or 8086-based. And 81% is 286 or below.

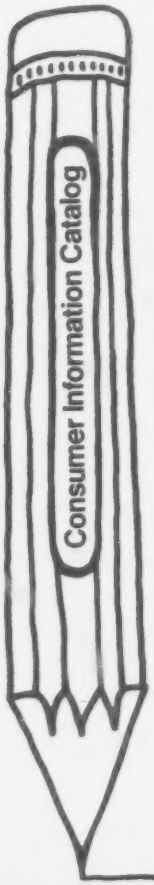
Retailers also are moving to help users replace those older machines. Businessland and Apple Computer Inc., for example, recently cut a deal with Hughes Aircraft Co. to buy about 1,000 older PCs and replace them with new Apple and IBM systems. Businessland and Apple structured the deal so that Hughes could turn in the old equipment over a four-month period at predetermined rates that decline over time. Hughes officials, who wanted to bring in the new equipment without increasing the percentage of PC-equipped workers, estimate that they will save up to $500,000 by selling off the used equipment.

☐ SIMPLY PASSING THE OLD BOX DOWN THE CORPORATE FOOD CHAIN HAS ITS DRAWBACKS.

Businessland officials stress that the Hughes deal was a singular arrangement. But they say they may formalize a program to buy old PC equipment.

ComputerLand also has been helping large customers get rid of their older PCs. Earlier last year, the Hayward, Calif.-based retailer quietly signed an agreement with American International Credit Corp. of New York under which the two offer to purchase and lease back a customer's installed PCs for a limited time while the customer develops a plan for replacing the old gear. According to ComputerLand senior vice president Al Andrus, the program, called "Planned Obsolescence," places installed systems under operating leases as short as six months, then replaces the old systems at the end of that period. ComputerLand already has put together nine such deals. The largest had a value of $9 million, Andrus says.

Of course, not all users are candidates for such elaborate replacement schemes. Many will continue to simply move older systems, as they are replaced by new PCs, to the desks of lower-level employees. But for a significant number of users who may be approaching PC saturation or who want consistent technologies throughout the organization, selling older equipment back to the vendor or dealer may be an attractive alternative. ▭



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MARKET INSIGHTS

AN ANALYSIS OF ECONOMIC TRENDS

Iraqi Jitters Jolt IS Performance

BY MADELINE FRANCHI
Cahners Economics

In August 1990, the DATAMATION Information Systems Performance Indicator (ISPI) dropped to 98.8, its lowest level since April 1987. Cahners Economics had originally expected the indicator to come in at 99.84 for August, but Iraq's invasion of Kuwait depressed the elements that make up the indicator further than expected. When the Middle East situation spooked the financial markets, the computer stock price index tumbled to 168.67 from 193.65 the month before. Another sign of the business retreat was the slippage of new orders for information systems and for new plant and equipment in general.

From July to August, new orders for information-processing equipment nosedived almost 12%; orders were down by 2.7% compared with August 1989 levels, marring a record of steady annualized increases amassed since September 1989.

Nevertheless, this one-month setback should not derail the longer term growth in demand the industry had been experiencing prior to the oil shock. For the 12 months ending in August 1990, new orders totaled $118.2 billion—an increase of 9.2% from the previous 12-month period. And even in August, some sectors remained strong; net new orders for communications equipment actually increased 12.7% over the level of August 1989. □

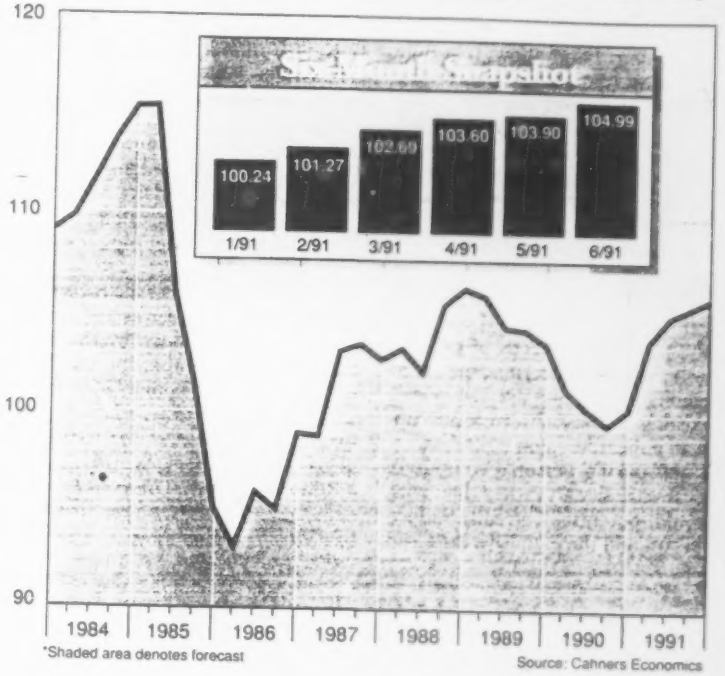
For more information on Cahners Economics's forecasting services, including seminars, newsletters and database diskettes, contact Dan Buchan at (617)-630-2105, by fax at (617)-630-2100, or write to Cahners Economics, 275 Washington Street, Newton, MA 02158.

Methodology

The DATAMATION Information Systems Performance Indicator tracks the economic health of the IS industry. Cahners Economics developed this indicator, which is based on weighted moving growth rates for five statistics: (1) IS inventory, (2) new IS orders, (3) average weekly hours of computer industry employees, (4) Standard and Poor's Computer Systems Stock Price Index and (5) contracts and orders for plant and equipment.

The IS Performance Indicator

Despite Iraqi market jitters, our forecast still shows improvement is on the way.



*Shaded area denotes forecast

Source: Cahners Economics

	August 1990	July 1990	% Change 7/90-8/90	August 1989	% Change 1989/1990
■ Information-Processing Equipment					
Shipments (SA, $ billions)	9.76	9.69	0.7	9.50	2.7
New Orders (SA, $ billions)	9.35	10.58	-11.7	9.60	-2.7
Unfilled Orders (SA, $ billions)	28.79	29.20	-1.4	27.78	3.6
Inventory (SA, $ billions)	21.41	21.19	1.0	22.10	-3.1
■ Computer Production Workers					
Employment (NSA, thousands)	273.2	274.8	-0.6	292.8	-6.7
Average Weekly Hours (monthly avg.)	41.5	41.1	1.0	42.1	-1.4
■ Stock Index					
S&P's Computer Systems Stock Price Index	168.67	193.65	-12.9	194.72	-13.4
■ Contracts & Orders					
New Plant & Equipment (SA, $ billions)	38.92	43.38	-10.3	41.68	-6.6

SA= seasonally adjusted;
NSA= not seasonally adjusted

Sources: U.S. Commerce Dept. and Standard & Poor's;
Forecasts: Cahners Economics

MARKET INSIGHTS

A SURVEY OF TECHNOLOGY TRENDS

Users Wait For Faster Wireless LANs

BY WARREN CHILDS
Business Research Group

The latest survey of DATAMATION's High-Technology Panel shows that only a handful—just 6%—have either implemented or plan to implement wireless local area network technology. And few are evaluating wireless LANs for future implementation, either, with only 16% of our panel members studying the possibility of installing them at their sites.

Although general interest is high—some 59% say they're at least somewhat interested in wireless LANs—the technology is still not developed sufficiently to meet the production needs of most IS shops, where communications speeds of 10 megabits per second are the norm. Most existing wireless LAN products operate at an unbearably slow 9,600bps.

Still, networking personal computers with microwave signals rather than with wires could, potentially, greatly reduce the high cost and the extensive time and inconvenience required to install LANs. The cost of wiring a 10-workstation LAN, not including adapter cards and software, can reach $3,000—counting the time and labor required to snake wires, drill through concrete floors and track circuits for shorts or breaks.

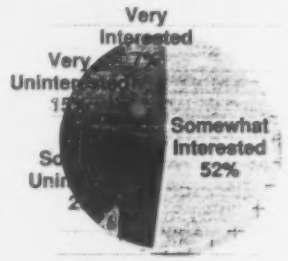
And a few vendors have recently announced products that break the 9,600bps barrier. Princeton, N.J.-based O'Neill Communications Inc. offers its Local Area Wireless Network (LAWN), with a throughput of 19.2Kbps, for example; NCR Corp. has announced its Waveline, with throughput as fast as 2Mbps; and most, recently, Motorola Inc. has announced its Wireless-In-Building (WIN) system, rated at 15Mbps.

But until these super high-speed products ship and are generally available, wireless LANs will most likely continue to be of interest mainly to small businesses typically driven more by the need to share peripherals than by the requirements of true LAN applications. ▭

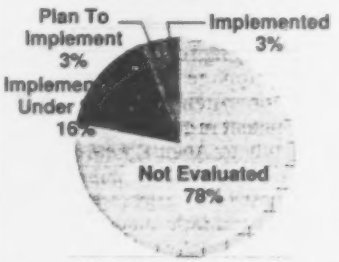
For more information, contact Nancy Finn at (617)-964-6204, by fax at (617)-558-4402 or write to her at Business Research Group, 275 Washington Street, Newton, MA 02158.

Look Ma, No Wires!

Although interest in wireless LAN technology runs high...



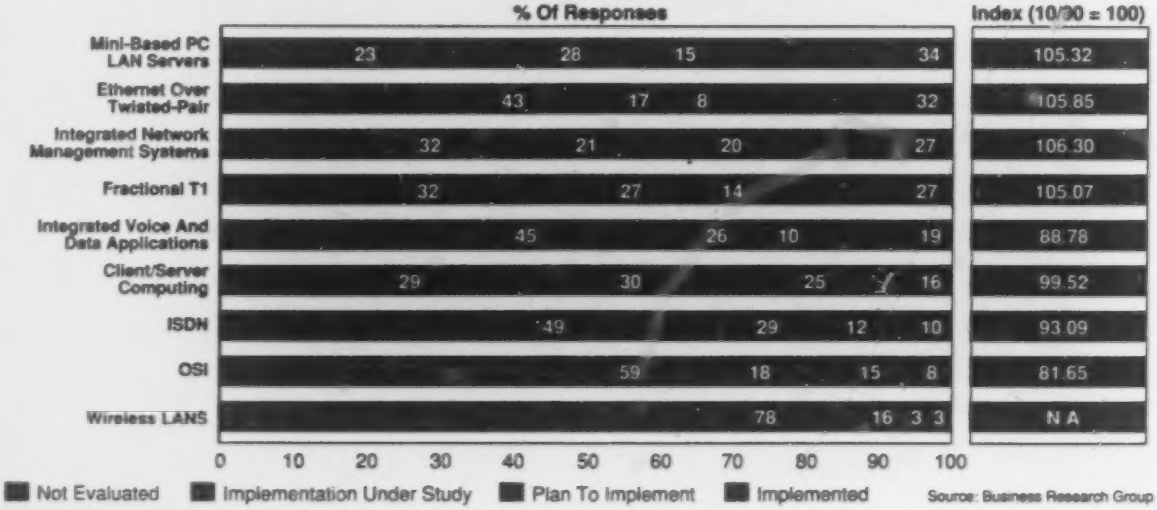
Users are holding back until wireless gets faster.



Source: DATAMATION, Business Research Group

DATAMATION's Technology Implementation Index: Networks/Communications

The DATAMATION Technology Implementation Index is designed to track the rate of implementation of emerging technologies. Each month, DATAMATION surveys a panel of its readers and asks them to rate their level of implementation for each technology. Over time, this index will show the rate at which technologies are gaining acceptance by the user community.


% Of Responses
Index (10/30 = 100)
Mini-Based PC LAN Servers 23 28 15 34 105.32
Ethernet Over Twisted-Pair 43 17 8 32 105.85
Integrated Network Management Systems 32 21 20 27 106.30
Fractional T1 32 27 14 27 105.07
Integrated Voice And Data Applications 45 26 10 19 88.78
Client/Server Computing 29 30 25 16 99.52
ISDN 49 29 12 10 93.09
OSI 59 18 15 8 81.65
Wireless LANS 78 16 3 3 N A
0 10 20 30 40 50 60 70 80 90 100
Not Evaluated
Implementation Under Study
Plan To Implement
Implemented

Source: Business Research Group